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Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. 09/875,241 | Applicant(s) HASHEMI, EBRAHIM | |
|---|---|---|---|
| | Examiner Yolanda Wilson | Art Unit 2113 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *29 March 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-40* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-40* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-9,11-25,27-38,40 are rejected under 35 U.S.C. 102(e) as being anticipated by Archibald, JR. et al. (US Publication Number 20020169995A1). As appears in claim 1, Archibald, Jr. et al. discloses a plurality of storage devices, a storage controller coupled to said plurality of storage devices, wherein said storage controller is configured to store data in the form of stripes where each stripe includes a plurality of data blocks stored across said plurality of storage devices and wherein block verification information is associated with each of said plurality of data blocks on page 3, paragraph 0025 and page 4, paragraph 0032, "Controller 106 is a disk array controller for striping data to and from disk drives 112-1 through 112-N...Each data sector 208-1 through 208-N includes a respective data header 206-1 through 206-J as a result of extended sector formatting. Each respective data header 206-1 through 206-K includes a data check code sub-data sector ($DSS_{ds}$) values associated with the sectors." Archibald, Jr. et al. discloses wherein at least one of the plurality of data blocks is a

redundancy data block on page 3, paragraph 0029, "There is a parity sector and a header for each data sector and header in the sector stripe."

Archibald, Jr. et al. discloses wherein said storage controller is further configured to initialize a given stripe in response to detecting a mismatch in said block verification information associated with at least one data block of said given stripe and wherein said storage controller is configured to initialize said given stripe by generating a corresponding redundancy data block for said given stripe based on at least an updated data block to be written to said given stripe on page 4, paragraph 0036.

3. As per claim 2, Archibald, Jr. et al. discloses said storage controller is configured to initialize said given stripe by reading one or more remaining data blocks of said given stripe and generating the corresponding redundancy data block for said given stripe based on the remaining data blocks and at least the updated data block on page 4, paragraph 0036, "Likewise, if an inconsistency is detected between a calculated DCCps and a stored DCCps, the parity data for parity sector is regenerated using the good host data stored in the stripe sector bodies...Finally, DCCds, DCCps, and DCCss objects for that sector stripe are generated from the now current user data and parity data so that all data, parity, and data check codes are current and consistent."

4. As per claim 3, Archibald, Jr. et al. discloses said redundancy data block contains parity data calculated from said other data blocks on page 4, paragraph 0032, "As is illustrated, data stripe 200 includes one parity sector 204 for each data sector in the stripe."

5. As per claim 4, Archibald, Jr. et al. discloses said block verification information associated with a particular data block includes a code dependent upon data contained within said particular data block on page 4, paragraph 0032, "The one or more $DSS_{ds}$ values can be Longitudinal Redundancy Check (LRC) values, Cyclical Redundancy Check (CRC) values or Checksum Values."

6. As per claim 5, Archibald, Jr. et al. discloses said code is an error detection code on page 4, paragraph 0032, "The one or more $DSS_{ds}$ values can be Longitudinal Redundancy Check (LRC) values, Cyclical Redundancy Check (CRC) values or Checksum Values."

7. As per claim 6, Archibald, Jr. et al. discloses said error detection code is a cyclic redundancy check code on page 4, paragraph 0032, "The one or more $DSS_{ds}$ values can be Longitudinal Redundancy Check (LRC) values, Cyclical Redundancy Check (CRC) values or Checksum Values."

8. As per claim 7, Archibald, Jr. et al. discloses said storage controller is configured to detect a mismatch in said block verification information by comparing a value contained in a field of said particular data block for storing said error detection code to a recomputed error detection code computed from data within said particular data block read form one of said storage devices on page 4, paragraph 0032, "Each data sector 208-1 through 208-N includes a respective data header 206-1 through 206-J as a result of extended sector formatting. Each respective data header 206-1 through 206-K includes a data check code sub-data sector ($DSS_{ds}$) values associated with the sectors."

9. As per claim 8, Archibald, Jr. et al. discloses said block verification information associated with a particular data block includes an address associated with said particular data block on page 3, paragraph 0028, "Each logical volume begins at the same physical disk sector on all physical drives 112-1 through 112-N used by the logical volume. A particular data stripe 200 is addressed by its logical volume and logical block number."

10. As per claim 9, Archibald, Jr. et al. discloses said address is a logical block address for each particular block on page 3, paragraph 0028, "Each logical volume begins at the same physical disk sector on all physical drives 112-1 through 112-N used by the logical volume. A particular data stripe 200 is addressed by its logical volume and logical block number."

11. As per claim 11, Archibald, Jr. et al. discloses said block verification information of said particular data block further includes a code dependent upon data contained within said particular data block on page 4, paragraph 0032, "The one or more $DSS_{ds}$ values can be Longitudinal Redundancy Check (LRC) values, Cyclical Redundancy Check (CRC) values or Checksum Values."

12. As per claim 12, Archibald, Jr. et al. discloses said code is an error detection code on page 4, paragraph 0032, "The one or more $DSS_{ds}$ values can be Longitudinal Redundancy Check (LRC) values, Cyclical Redundancy Check (CRC) values or Checksum Values."

13. As per claim 13, Archibald, Jr. et al. discloses said error detection code is a cyclic redundancy check code on page 4, paragraph 0032, "The one or more $DSS_{ds}$ values

can be Longitudinal Redundancy Check (LRC) values, Cyclical Redundancy Check (CRC) values or Checksum Values."

14. As per claim 14, Archibald, Jr. et al. discloses said plurality of storage devices is a disk drive in Figure 1.

15. As per claim 15, Archibald, Jr. et al. discloses said block verification information includes a block ID on page 3, paragraph 0028, "Each logical volume begins at the same physical disk sector on all physical drives 112-1 through 112-N used by the logical volume. A particular data stripe 200 is addressed by its logical volume and logical block number."

16. As per claim 16, Archibald, Jr. et al. discloses said storage controller is configured to implement RAID 5 functionality on page 3, paragraph 0025 and page 4, paragraph 0032, "Controller 106 is a disk array controller for striping data to and from disk drives 112-1 through 112-N according to the particular RAID level being used in system 100. Various RAID levels are known in the art of configuring RAID data storage systems."

17. As per claim 17, Archibald, Jr. et al. discloses a plurality of storage devices, a storage controller coupled to said plurality of storage devices, wherein said storage controller is configured to store data in the form of stripes where each stripe includes a plurality of data blocks stored across said plurality of storage devices, wherein at least one of the plurality of data blocks is a redundancy data block and wherein each data block includes block verification information on page 3, paragraph 0025 and page 4, paragraph 0032, "Controller 106 is a disk array controller for striping data to and from

disk drives 112-1 through 112-N...Each data sector 208-1 through 208-N includes a respective data header 206-1 through 206-J as a result of extended sector formatting. Each respective data header 206-1 through 206-K includes a data check code sub-data sector ($DSS_{ds}$) values associated with the sectors." Archibald, Jr. et al. discloses wherein at least one of the plurality of data blocks is a redundancy data block on page 3, paragraph 0029, "There is a parity sector and a header for each data sector and header in the sector stripe."

Archibald, Jr. et al. discloses wherein said storage controller is further configured to initialize a given stripe in response to detecting a mismatch in said block verification information associated with at least two data block of said given stripe and wherein said storage controller is configured to initialize said given stripe by generating a corresponding redundancy data block for said given stripe based on at least an updated data block to be written to said given stripe on page 4, paragraph 0036.

18. As per claim 18, Archibald, Jr. et al. discloses said storage controller is configured to initialize said given stripe by reading one or more remaining data blocks of said given stripe and generating the corresponding redundancy data block for said given stripe based on the remaining data blocks and at least the updated data block on page 4, paragraph 0036, "Likewise, if an inconsistency is detected between a calculated DCCps and a stored DCCps, the parity data for parity sector is regenerated using the good host data stored in the stripe sector bodies...Finally, DCCds, DCCps, and DCCss objects for that sector stripe are generated from the now current user data and parity data so that all data, parity, and data check codes are current and consistent."

19. As per claim 19, Archibald, Jr. et al. discloses said redundancy data block contains parity data calculated from said other data blocks on page 4, paragraph 0032, "As is illustrated, data stripe 200 includes one parity sector 204 for each data sector in the stripe."

20. As per claim 20, Archibald, Jr. et al. discloses said block verification information associated with a particular data block includes a code dependent upon data contained within said particular data block on page 4, paragraph 0032, "The one or more $DSS_{ds}$ values can be Longitudinal Redundancy Check (LRC) values, Cyclical Redundancy Check (CRC) values or Checksum Values."

21. As per claim 21, Archibald, Jr. et al. discloses said code is an error detection code on page 4, paragraph 0032, "The one or more $DSS_{ds}$ values can be Longitudinal Redundancy Check (LRC) values, Cyclical Redundancy Check (CRC) values or Checksum Values."

22. As per claim 22, Archibald, Jr. et al. discloses said error detection code is a cyclic redundancy check code on page 4, paragraph 0032, "The one or more $DSS_{ds}$ values can be Longitudinal Redundancy Check (LRC) values, Cyclical Redundancy Check (CRC) values or Checksum Values."

23. As per claim 23, Archibald, Jr. et al. discloses said storage controller is configured to detect a mismatch in said block verification information by comparing a value contained in a field of said particular data block for storing said error detection code to a recomputed error detection code computed from data within said particular data block read form one of said storage devices on page 4, paragraph 0036, "The

newly calculated DCCds and stored DCCds for each data sector in the sector stripe are compared as is the newly calculated DCCps compared to the stored DCCps for the parity sector. If an inconsistency is detected between a calculated DCCds and a stored DCCds...the user sector body of data for the affected sector is regenerated using the remaining good data and parity sector."

24. As per claim 24, Archibald, Jr. et al. discloses said block verification information associated with a particular data block includes an address associated with said particular data block on page 3, paragraph 0028, "Each logical volume begins at the same physical disk sector on all physical drives 112-1 through 112-N used by the logical volume. A particular data stripe 200 is addressed by its logical volume and logical block number."

25. As per claim 25, Archibald, Jr. et al. discloses said address is a logical block address for each particular block on page 3, paragraph 0028, "Each logical volume begins at the same physical disk sector on all physical drives 112-1 through 112-N used by the logical volume. A particular data stripe 200 is addressed by its logical volume and logical block number."

26. As appears in claim 27, Archibald, Jr. et al. discloses a host, a data storage subsystem coupled to said host, a plurality of storage devices, a storage controller coupled to said plurality of storage devices in Figure 1. Archibald, Jr. et al. discloses wherein said storage controller is configured to store data in the form of stripes where each stripe includes a plurality of data blocks stored across said plurality of storage devices, wherein at least one of the plurality of data blocks is a redundancy data block

and wherein block verification information is associated with each of said plurality of data blocks on page 3, paragraph 0025 and page 4, paragraph 0032, "Controller 106 is a disk array controller for striping data to and from disk drives 112-1 through 112-N...Each data sector 208-1 through 208-N includes a respective data header 206-1 through 206-J as a result of extended sector formatting. Each respective data header 206-1 through 206-K includes a data check code sub-data sector ($DSS_{ds}$) values associated with the sectors." Archibald, Jr. et al. discloses wherein at least one of the plurality of data blocks is a redundancy data block on page 3, paragraph 0029, "There is a parity sector and a header for each data sector and header in the sector stripe."

Archibald, Jr. et al. discloses wherein said storage controller is further configured to initialize a given stripe in response to detecting a mismatch in said block verification information associated with at least one data block of said given stripe and wherein said storage controller is configured to initialize said given stripe by generating a corresponding redundancy data block for said given stripe based on at least an updated data block to be written to said given stripe on page 4, paragraph 0036.

27. As per claim 28, Archibald, Jr. et al. discloses said storage controller is configured to initialize said given stripe by reading one or more remaining data blocks of said given stripe and generating the corresponding redundancy data block for said given stripe based on the remaining data blocks and at least the updated data block on page 4, paragraph 0036, "Likewise, if an inconsistency is detected between a calculated DCCps and a stored DCCps, the parity data for parity sector is regenerated using the good host data stored in the stripe sector bodies...Finally, DCCds, DCCps, and DCCss

objects for that sector stripe are generated from the now current user data and parity data so that all data, parity, and data check codes are current and consistent."

28. As per claim 29, Archibald, Jr. et al. discloses said redundancy data block contains parity data calculated from said other data blocks on page 4, paragraph 0032, "As is illustrated, data stripe 200 includes one parity sector 204 for each data sector in the stripe."

29. As per claim 30, Archibald, Jr. et al. discloses said block verification information associated with a particular data block includes an error detection code on page 4, paragraph 0032, "The one or more $DSS_{ds}$ values can be Longitudinal Redundancy Check (LRC) values, Cyclical Redundancy Check (CRC) values or Checksum Values."

30. As per claim 31, Archibald, Jr. et al. discloses said block verification information associated with a particular data block includes an address associated with said particular data block on page 3, paragraph 0028, "Each logical volume begins at the same physical disk sector on all physical drives 112-1 through 112-N used by the logical volume. A particular data stripe 200 is addressed by its logical volume and logical block number."

31. As appears in claim 32, Archibald, Jr. et al. discloses storing data in the form of stripes within a plurality of storage devices where each stripe includes a plurality of data blocks stored across said plurality of storage devices on page 3, paragraph 0025 and page 4, paragraph 0032, "Controller 106 is a disk array controller for striping data to and from disk drives 112-1 through 112-N...Each data sector 208-1 through 208-N includes a respective data header 206-1 through 206-J as a result of extended sector formatting.

Each respective data header 206-1 through 206-K includes a data check code sub-data sector ($DSS_{ds}$) values associated with the sectors."

Archibald, Jr. et al. discloses wherein block verification information is associated with each of said plurality of data blocks initializing a given stripe in response to detecting a mismatch in said block verification information associated with at least one data block of said given stripe on page 4, paragraph 0036, "The newly calculated DCCds and stored DCCds for each data sector in the sector stripe are compared as is the newly calculated DCCps compared to the stored DCCps for the parity sector. If an inconsistency is detected between a calculated DCCds and a stored DCCds...the user sector body of data for the affected sector is regenerated using the remaining good data and parity sector."

32. As per claim 33, Archibald, Jr. et al. discloses said plurality of data blocks of each stripe includes a redundancy data block containing redundant data calculated with dependence upon other data blocks of said each stripe on page 3, paragraph 0029, "There is a parity sector and a header for each data sector and header in the sector stripe."

33. As per claim 34, Archibald, Jr. et al. discloses said redundancy data block contains parity data calculated from said other data blocks on page 4, paragraph 0032, "As is illustrated, data stripe 200 includes one parity sector 204 for each data sector in the stripe."

34. As per claim 35, Archibald, Jr. et al. discloses said block verification information of a particular data block includes an error detection code on page 4, paragraph 0032,

"The one or more $DSS_{ds}$ values can be Longitudinal Redundancy Check (LRC) values, Cyclical Redundancy Check (CRC) values or Checksum Values."

35. As per claim 36, Archibald, Jr. et al. discloses said block verification information associated with said particular data block further includes an address associated with said particular data block on page 3, paragraph 0028, "Each logical volume begins at the same physical disk sector on all physical drives 112-1 through 112-N used by the logical volume. A particular data stripe 200 is addressed by its logical volume and logical block number."

36. As per claim 37, Archibald, Jr. et al. discloses said block verification information associated with said particular data block includes an address associated with said particular data block on page 3, paragraph 0028, "Each logical volume begins at the same physical disk sector on all physical drives 112-1 through 112-N used by the logical volume. A particular data stripe 200 is addressed by its logical volume and logical block number."

37. As per claim 38, Archibald, Jr. et al. discloses said detecting a mismatch in said block verification information comprises comparing a value contained in a field of said particular data block for storing said error detection code to a recomputed error detection code computed from data within said particular data block read form one of said storage devices on page 4, paragraph 0036, "The newly calculated DCCds and stored DCCds for each data sector in the sector stripe are compared as is the newly calculated DCCps compared to the stored DCCps for the parity sector. If an inconsistency is detected between a calculated DCCds and a stored DCCds...the user

sector body of data for the affected sector is regenerated using the remaining good data and parity sector."

38. As per claim 40, Archibald, Jr. et al. discloses storing data in the form of stripes where each stripe includes a plurality of data blocks stored across said plurality of storage devices on page 3, paragraph 0025 and page 4, paragraph 0032, "Controller 106 is a disk array controller for striping data to and from disk drives 112-1 through 112-N...Each data sector 208-1 through 208-N includes a respective data header 206-1 through 206-J as a result of extended sector formatting. Each respective data header 206-1 through 206-K includes a data check code sub-data sector ($DSS_{ds}$) values associated with the sectors."

Archibald, Jr. et al. discloses initializing a subset of said stripes in said data storage subsystem; performing a partial write to at least one of said stripes of said subset; and subsequent to performing the partial write to at least one of said stripes of said subset, initializing one or more remaining stripes in said data storage subsystem stripe on page 4, paragraph 0036, "The newly calculated DCCds and stored DCCds for each data sector in the sector stripe are compared as is the newly calculated DCCps compared to the stored DCCps for the parity sector. If an inconsistency is detected between a calculated DCCds and a stored DCCds...the user sector body of data for the affected sector is regenerated using the remaining good data and parity sector." The partial write is writing to the sectors.

***Claim Rejections - 35 USC § 103***

39. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

40. Claims 10,26,39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Archibald, Jr. et al. in view of IBM. As per claims 10, 26, 39, Archibald, Jr. et al. fails to explicitly state detecting a mismatch in said block verification information comprises comparing a value contained in a field of said particular data block for storing said address to an expected value of said address for said particular data block read from one of said storage devices.

IBM discloses on page 189, "The solution to this problem is to record the LBA within the sector of data when it is written to the device and check the LBA when the data is read form the device."

Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to detect a mismatch in said block verification information comprises comparing a value contained in a field of said particular data block for storing said address to an expected value of said address for said particular data block read from one of said storage devices. A person of ordinary skill in the art would have been motivated to have detect a mismatch in said block verification information comprises comparing a value contained in a field of said particular data block for storing said address to an expected value of said address for said particular data block read from

one of said storage devices because there is a need to determine if the write data has been sent to the write logical block address. IBM discloses on page 189, "Direct Access Storage Devices (DASDs) have no capability for determining if they have sent the host system incorrect data for a given Logical Block Address (LBA)."

***Response to Arguments***

41. Applicant's arguments with respect to claims 1-40 have been considered but are moot in view of the new ground(s) of rejection. Applicant argues per independent claims 1 and 27 that Archibald, Jr. et al. "fails to teach or suggest 'said storage controller is further configured to initialize a given stripe in response to detecting a mismatch in said block verification information associated with at least one data block of said given stripe; wherein said storage controller is further configured to initialize a given stripe in response to detecting a mismatch in said block verification information associated with at least one data block of said given stripe and wherein said storage controller is configured to initialize said given stripe by generating a corresponding redundancy data block for said given stripe based on at least an updated data block to be written to said given stripe'." Examiner respectfully disagrees with Applicant. Archibald, Jr. et al. does discloses initializing a given stripe. The initialization, per the specification on page 11, line 28 – page 12, line 2, involves the "redundant data block(s) (e.g., the parity data block) for the stripe is consistent with the remaining blocks of the stripe." Archibald, Jr. et al. discloses this an indicated in the rejection of these claims. The initialization is accomplished by recalculating the parity blocks.

42. The arguments pertaining to independent claims 17,27,32, and 40 on pages 12 and 13 are discussed above in the rejection of these claims.

***Conclusion***

43. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yolanda Wilson whose telephone number is (703) 305-3298. The examiner can normally be reached on M-F (7:30-4:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Beausoliel can be reached on (703) 305-9713. The fax phone

number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100